FRASER VALLEY REGIONAL DISTRICT



REGIONAL AND CORPORATE SERVICES COMMITTEE

OPEN MEETING AGENDA

Wednesday, January 9, 2019

9:00 am

FVRD Boardroom, 45950 Cheam Avenue, Chilliwack, BC

Pages

1. CALL TO ORDER

2. APPROVAL OF AGENDA, ADDENDA AND LATE ITEMS

MOTION FOR CONSIDERATION

THAT the Agenda, Addenda and Late Items for the Regional and Corporate Services Committee Open Meeting of January 9, 2019 be approved;

AND THAT all delegations, reports, correspondence and other information set to the Agenda be received for information.

3. MINUTES/MATTERS ARISING

3.1 Minutes of the Regional and Corporate Services Committee Open Meeting - 4 - 10 December 11, 2018

MOTION FOR CONSIDERATION

THAT the Minutes of the Regional and Corporate Services Committee Open Meeting of December 11, 2018 be adopted.

4. CORPORATE ADMINISTRATION

4.1 LMLGA AGM and Annual Conference: Harrison Hot Springs – May 8 to 10, 11 - 13 2019 2019

- Corporate report dated January 9, 2019 from Jaime Reilly, Manager of Corporate Administration
- LMLGA 2019 Preliminary Conference Program

MOTION FOR CONSIDERATION

THAT the Fraser Valley Regional District Board authorize the Board Chair, Board Vice Chair and Chief Administrative Officer to attend the 2019 Lower Mainland Local Government Association AGM and Conference to be held in Harrison Hot Springs, BC between May 8 and 10, 2019;

AND THAT registration fees, accommodation and travel costs be approved from Budget 101.

4.2 FCM Annual Conference: Quebec City, May 30 to June 2, 2019 14 - 16

- Corporate report dated January 9, 2019 from Jaime Reilly, Manager of Corporate Administration
- FCM 2019 Program

MOTION FOR CONSIDERATION

THAT the Fraser Valley Regional District Board authorize the Board Chair and Board Vice Chair to attend the FCM Annual Conference and Trade Show to be held in Quebec City from May 30 to June 2, 2019;

AND THAT registration fees, accommodation and travel costs be approved from Budget 101.

5. FINANCE

No Items.

6. REGIONAL PROGRAMS AND SERVICES

6.1 ENVIRONMENTAL SERVICES

- 6.1.1 Solar Panel Grant for Fraser Valley Regional District Head Office 17 19 Building
 - Corporate report dated January 9, 2019 from Micha Gutmanis, Environmental Services Coordinator

MOTION FOR CONSIDERATION

THAT the Fraser Valley Regional District Board accept a \$25,000 grant from Solar Now and proceed with the installation of a rooftop solar panel system at the Cheam Avenue office building.

6.1.2 Nuisance Mosquito Control Pest Management Plan

FOR INFORMATION ONLY

- Corporate report dated January 9, 2019 from Lance Lilley, Environmental Planner
- Draft 2019-2024 FVRD Mosquito Pest Management Plan

6.1.3 The BC Organics Infrastructure Program

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FOR INFORMATION ONLY

 Corporate report dated January 9, 2019 from Jamie Benton, Environmental Services Coordinator

6.2 REGIONAL PARKS

No Items.

6.3 STRATEGIC PLANNING AND INITIATIVES

No Items.

6.4 OUTDOOR RECREATION AND PLANNING

6.4.1 FVRD Outdoor Recreation Economic Impact Analysis Update 60 - 62 FOR INFORMATION ONLY

• Corporate report dated January 9, 2019 from David Urban, Manager of Outdoor Recreation Planning

7. OTHERS MATTERS

7.1	Investing in Canada Infrastructure Grant Program - Requests for Board Support	63 - 67
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- Verbal update by Paul Gipps, Chief Administrative Officer
- Letter dated December 20, 2018 from Village of Harrison Hot Springs
- Letter dated December 21, 2018 from the District of Kent
- 8. ADDENDA ITEMS/LATE ITEMS
- 9. REPORTS BY STAFF
- 10. REPORTS BY DIRECTORS
- 11. PUBLIC QUESTION PERIOD FOR ITEMS RELEVANT TO AGENDA
- 12. ADJOURNMENT

MOTION FOR CONSIDERATION

THAT the Regional and Corporate Services Committee Open Meeting of January 9, 2019 be adjourned.



FRASER VALLEY REGIONAL DISTRICT REGIONAL AND CORPORATE SERVICES COMMITTEE OPEN MEETING MINUTES

Tuesday, December 11, 2018 9:00 am FVRD Boardroom, 45950 Cheam Avenue, Chilliwack, BC

Members Present:	Director Jason Lum, City of Chilliwack, Chair Director Patricia Ross, City of Abbotsford, Vice Chair Director Pam Alexis, District of Mission Director Henry Braun, City of Abbotsford Director Bill Dickey, Electoral Area D Director Orion Engar, Electoral Area E Director Leo Facio, Village of Harrison Hot Springs Director Ken Popove, City of Chilliwack Director Terry Raymond, Electoral Area A Director Peter Robb, District of Hope Alternate Director Susan Spaeti, District of Kent Director Al Stobbart, Electoral Area G
Regrets:	Director Sylvia Pranger, District of Kent
Staff Present:	Paul Gipps, Chief Administrative Officer Mike Veenbaas, Director of Financial Services Suzanne Gresham, Director of Corporate Initiatives Barclay Pitkethly, Director of Regional Programs Stacey Barker, Deputy Director of Regional Programs Jennifer Kinneman, Manager of Corporate Affairs Jaime Reilly, Manager of Corporate Administration Christina Vugteveen, Manager of Parks David Urban, Manager of Outdoor Recreation Planning Kristy Hodson, Manager of Financial Operations Marina Richter, Environmental Services Coordinator Jamie Benton, Environmental Services Coordinator Micha Gutmanis, Environmental Services Coordinator Matthew Fang, Network Analyst I Maggie Mazurkewich, Executive Assistant to CAO Chris Lee, Executive Assistant (Recording Secretary)
Also Present:	Christopher Bush, President, Catalyst Agri-Innovations Society <i>(as per item 3.1)</i> Stephanie Hooker, AdvantageHOPE <i>(as per item 3.2)</i> Brent Graham, Manager, Government Relations and Public Policy, Fortis, BC <i>(as per item 3.4)</i>

Neal Pobran, Senior Manager, Community and Indigenous Relations, Fortis BC *(as per item 3.4)* Darin Wong, Community and Indigenous Relations Manager, Lower Mainland, Fortis BC *(as per item 3.4)*

1. CALL TO ORDER

Chair Lum called the meeting to order at 9:00 a.m.

2. APPROVAL OF AGENDA, ADDENDA AND LATE ITEMS

Moved By DICKEY Seconded By FACIO

THAT the delegation from Fortis, BC (item 3.4) be added to the Agenda and that the agenda be varied to hear item 3.4 prior to item 3.3;

AND THAT the Agenda, Addenda and Late Items for the Regional and Corporate Services Committee Open Meeting of December 11, 2018 be approved, as amended;

AND FURTHER THAT all delegations, reports, correspondence and other information set to the Agenda be received for information.

CARRIED

3. DELEGATIONS AND PRESENTATIONS

3.1 <u>Christopher Bush, President, Catalyst Agri-Innovations Society and Mateo</u> <u>Ocejo of Net Zero Waste</u>

Christopher Bush, President of the Catalyst Agri-Innovations Society reported that the majority and highest concentration of agricultural activities in BC reside in the Fraser Valley and spoke to the ability for stakeholders to convert agricultural waste into opportunities. He noted there is an opportunity for the FVRD to access up to \$20 million from the *Provincial Organics Infrastructure Program.*

Mr. Bush also provided a book to the FVRD entitled 'The Solution Revolution: How Business, Government, and Social Enterprises are teaming up to Solve Society's Toughest Problems' by William D. Eggers & Paul MacMillan

Christopher Bush was acknowledged for his passion in finding solutions to agriculture waste and the following motion was put forward:

ROSS/FACIO

THAT staff be directed to prepare a report for the Board's information at the January 23, 2019 Board meeting with respect to the proposed submission of an application to the B.C. Ministry of Environment Organics Infrastructure Program for a proposed Fraser Valley Organics Conversion Initiative.

CARRIED

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3.2 <u>Stephanie Hooker, AdvantageHOPE</u>

Stephanie Hooker from AdvantageHOPE provided a presentation *entitled 'Hope, Cascades and Canyons – Municipal Regional District Tax (MRDT) – Five Year Tourism Strategy Development',* providing an overview of tourism objectives, guiding principles, tourism vision and mission, strengths to leverage, priority strategies, primary target markets, funding tools and terms of reference. Ms. Hooker reported that the Hope, Cascades and Canyons is a tourism marketing collective spanning Bridal Falls, Hope, Yale, Boston Bar (Areas A, B, D and E of FVRD) and Manning Park. Ms. Hooker reported that AdvantageHOPE has been working with accommodators and tour operators to form a tourism advisory committee.

Ms. Hooker reported that 54 communities/areas in BC have accessed the MRDT, including Chilliwack and Abbotsford. The MRDT funds are returned to the 'eligible entity' to be managed locally and invested in destination marketing programs that will support business growth.

Ms. Hooker advised that the District of Hope has provided a letter of support to AdvantageHOPE for the collection of MRDT in their region and is now seeking a similar letter and a motion of support from the FVRD for the collection of MRDT in Areas A, B, D and E.

Questions were raised and comments were provided from EA Directors as to whether there is any advantage of the MRDT to their specific areas. It was proposed that the affected Electoral Areas meet together to discuss further on this topic before a decision is made.

Item 3.4 was dealt with at this point.

3.4 FortisBC

Brent Graham, Manager, Government Relations and Public Policy, Neal Proban, Senior Manager, Community and Indigenous Relations and Darin Wong, Community and Indigenous Relations Manager, Lower Mainland of Fortis, BC provided a joint presentation with respect to the shortage of natural gas following the Enbridge-owned natural gas pipeline rupture near Prince George. They indicated that they are looking for support from all of their stakeholders to reduce usage of natural gas in their facilities and to promote the conservation message. They also reported on Fortis's system preservation plan and indicated that their next steps include ongoing conservation, vulnerable infrastructure (facilities that need to be kept on) and communications collaboration with stakeholders.

Questions were raised regarding rate increase, future preventive measures, and the amount of gas going south of the border. It was noted that in terms of conservation, the FVRD has been doing their part challenging staff to conserve energy and upgrading equipment to reduce energy.

3.3 Job Creation Partnership Program - Summary Highlights

David Urban, Manager of Outdoor Recreational Planning delivered a presentation, providing a summary of 2018 Job Creation Partnership Program (JCP) for Experience the Fraser and Regional Parks. Mr. Urban reported that in 2015 and 2016, Ecoworks Landscape Services Inc. in partnership with the Fraser Valley Regional District were successful in receiving grants through the Job Creation Partnership (JCP) Program. He noted that this year \$482,000 in provincial funding was received to continue this work, totaling \$1.1 million of grants received for this Program. A key aspect of this program was to provide employment and job skills training for unemployed workers.

Mr. Urban provided a visual presentation on the projects undertaken through the JCP Program.

Staff and the JCP participants were commended on the great work accomplished and the benefits of these projects to the community was highlighted.

4. MINUTES/MATTERS ARISING

4.1 <u>Minutes of the Regional and Corporate Services Committee Open Meeting -</u> October 11, 2018

Moved By FACIO Seconded By ALEXIS

THAT the Minutes of the Regional and Corporate Services Committee Open Meeting of October 11, 2018 be adopted.

CARRIED

In response to a question raised regarding the status of the YMCA project discussed at the RACS meeting in October, staff reported that that they will be in discussion with YMCA in January and that a policy will be developed and brought forward for the Board's consideration.

5. CORPORATE ADMINISTRATION

5.1 2019 FVRD Board and Committee Meeting Schedule

Paul Gipps, CAO reported that the start time of the Recreation, Culture and Airpark Services Commission meetings are still under consideration.

Moved By ALEXIS Seconded By ENGAR

THAT the Fraser Valley Regional District Board consider approval of the draft 2019 Board and Committee Schedule.

CARRIED

5.2 Regional District Chair and CAO Forum: March 26 and 27, 2019

Chair Lum reported that he will be unavailable to attend the Regional District Chair and CAO Forum in March, 2019 and proposed that the Vice Chair attend in his place.

Moved By FACIO Seconded By ROBB

THAT the Fraser Valley Regional District Board authorize the Board Chair and Chief Administrative Officer to attend the Regional District Chair and CAO Forum to be held in Victoria, BC on March 26 and 27, 2019;

AND THAT registration fees, accommodation and travel expenses be approved from the Regional Administration Budget 101.

CARRIED

6. FINANCE

No Items.

7. REGIONAL PROGRAMS AND SERVICES

7.1 ENVIRONMENTAL SERVICES

7.1.1 <u>Love Food Hate Waste - Local Government Food Waste Prevention</u> <u>Partnership</u>

Moved By POPOVE Seconded By STOBBART

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THAT the Fraser Valley Regional District Board enter into an agreement with the BC Ministry of Environment and Climate Change Strategy, to work in partnership to use and promote the *Love Food Hate Waste* educational campaign to encourage food waste prevention.

CARRIED

7.1.2 Energy Efficiency Study at Hope Recreation Centre

Paul Gipps, CAO reported that an Energy Efficiency Study for the Hope Recreation Centre and adjoining Curling Rink has been undertaken through a BC Hydro PowerSmart grant.

7.2 **REGIONAL PARKS**

No Items.

7.3 STRATEGIC PLANNING AND INITIATIVES

No Items.

7.4 OUTDOOR RECREATION AND PLANNING

No Items.

8. ADDENDA ITEMS/LATE ITEMS

No items.

9. REPORTS BY STAFF

No Items.

10. REPORTS BY DIRECTORS

None.

11. PUBLIC QUESTION PERIOD FOR ITEMS RELEVANT TO AGENDA

None

12. ADJOURNMENT

Moved By FACIO Seconded By ROSS

THAT the Regional and Corporate Services Committee Open Meeting of December 11, 2018 be adjourned.

CARRIED

The Regional and Corporate Services Committee Open Meeting adjourned at 10:26 a.m.

MINUTES CERTIFIED CORRECT:

Director Jason Lum, Chair



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee	Date: 2019-01-09
From: Jaime Reilly, Manager of Corporate Administration	File No: 0390-20-:

0390-20-2019

Subject: LMLGA AGM and Annual Conference: Harrison Hot Springs – May 8 to 10, 2019

RECOMMENDATION

THAT the Fraser Valley Regional District Board authorize the Board Chair, Board Vice Chair and Chief Administrative Officer to attend the 2019 Lower Mainland Local Government Association AGM and Conference to be held in Harrison Hot Springs, BC between May 8 and 10, 2019;

AND THAT registration fees, accommodation and travel costs be approved from Budget 101.

BACKGROUND

In 2018, the LMLGA AGM and Conference was held in Whistler, BC.

DISCUSSION

The Agenda for this conference is not yet available; however, attached is a preliminary program. This conference includes a tradeshow, workshops, seminars, keynote speakers as well as the annual AGM and resolution session.

As this conference is historically well attended, staff is bringing this forward for discussion prior to registration opening in February 2019.

Approval is also being sought from the Board for the attendance of Electoral Area Directors at this event.

COST

Early bird registration fees (prior to March 31, 2019) are \$440, plus taxes. Registration fees increase to a cost of \$520 after April 1, 2019. The cost of the hotel room is \$149 plus taxes, per night, per person. As the conference is held in Harrison Hot Springs, the only travel costs will be mileage.

CONCLUSION

As the Lower Mainland Local Government Association AGM and Conference is held locally and usually well attended, staff are bringing forward this for the Board's consideration so that registration and hotel accommodations can be arranged as soon as possible.

COMMENTS BY:

Mike Veenbaas, Director of Financial Services

Reviewed and supported. Funding for the Board Chair and Board Vice Chair to attend LMLGA is included in Budget 101 Regional Administration.

Paul Gipps, Chief Administrative Officer

Reviewed and supported.

2019 Preliminary Program / Outline

Each year we welcome Elected Officials and those involved in Local Government to attend this 2.5 day conference. This event includes a trade show along with workshops, seminars, and keynote speakers, as well as our annual AGM and resolution session. Workshop Applications, Sponsorship Commitments and Charitable Non-Profit Trade Show Applications for the 2019 Conference are now available and open for submission.

The Lower Mainland LGA conference will be your best opportunity to make connections across the region and ensure that what matters most to you finds its way into policy so that the communities and regions of the Lower Mainland LGA continue to thrive. **Registration opens February 2019**.

Harrison Hot Springs Resort & Spa 100 Esplanade Avenue Harrison Hot Springs, BC VON 1K0

Preliminary Program / Outline

Wednesday, May 8 Pre-Conference Sessions Official Opening Session & Keynote (7pm start) Welcome Reception, Trade Show & Networking

Thursday, May 9 UBCM President's Address Educational Sessions & Workshops AGM & Resolutions Evening Networking Reception & Trade Show Annual Banquet Dinner & Entertainment

Friday, May 10 Educational Sessions & Workshops Conference Closing Keynote (ends at approx. 1pm)

Conference Start & End Times: Please note that the pre-conference sessions begin the afternoon of May 9th usually after 3:00pm. The official opening session begins at 7:00pm. The conference ends at approximately 12:30pm on Friday May 11th. Most attendees arrive in Harrison on the Wednesday afternoon and depart on Friday afternoon following the conference.



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee From: Jaime Reilly, Manager of Corporate Administration Date: 2019-01-09 File No: 0390-20-2019

Subject: FCM Annual Conference: Quebec City, May 30 to June 2, 2019

RECOMMENDATION

THAT the Fraser Valley Regional District Board authorize the Board Chair and Board Vice Chair to attend the FCM Annual Conference and Trade Show to be held in Quebec City from May 30 to June 2, 2019;

AND THAT registration fees, accommodation and travel costs be approved from Budget 101.

BACKGROUND

In 2018, the FCM Conference was held in Halifax, Nova Scotia.

DISCUSSION

The year's FCM Conference is held at the Quebec City Convention Centre. The conference consists of four days of plenaries, workshops, industry-led seminars and networking opportunities.

The Agenda for this year's conference has not yet been released. However, a copy of the most up to date program is attached for the Board's reference. As this conference takes place in Quebec City and requires travel arrangements to be made well in advance, staff is bringing this forward for the Board for consideration.

Approval is also being sought from the Board for the attendance of Electoral Area Directors at the FCM Conference.

COST

The conference registration fees and conference hotel rates have not yet been announced, and registration is scheduled to open in mid-January. However, the registration fees in 2018 were approximately \$900, plus taxes, and the average cost of a hotel room was \$250, plus tax, per night, per person.

As of the date of this memo, the cost for an average round trip flight between Vancouver and Quebec City is approximately \$1,000 plus taxes, per person.

CONCLUSION

The FCM Annual Conference will be held in Quebec City between May 30 and June 2, 2019. As travel arrangements will be required to be made well in advance, staff are bringing forward this memo for the Board's consideration at this early date.

COMMENTS BY:

Mike Veenbaas, Director of Financial Services

Reviewed and supported. Funding for the Board Chair and Board Vice Chair to attend FCM is included in Budget 101 Regional Administration.

Paul Gipps, Chief Administrative Officer

Reviewed and supported.



Program-at-a-glance

Program subject to change without notice.

Thursday, May 30

8:00 – 15:00 Exhibitor Registration and Move in
8:00 – 19:00 Delegate Registration
8:30 – 17:30Big City Mayor's Caucus Meeting (BCMC)
10:00 – 13:00 Study Tours
13:00 – 15:30 Blanket Exercise: Reconciliation through
learning
13:00 – 15:00 Study Tours
15:00 – 15:45 Orientation Session for First-Timers (S/I)
16:00 – 17:00Regional Networking
17:00 – 19:00 Official Trade Show Opening and Reception

Friday, May 31

7:00 – 15:30Exhibitor Registration
7:00 – 18:00Delegate Registration
7:00 – 8:00Breakfast on the trade show floor
7:00 – 15:30Trade Show
8:00 – 9:00Opening Ceremony (S/I)
9:00 – 9:30Political Keynote (S/I)
9:30 – 10:15 President's Forum (S/I)
10:15 – 11:00 Coffee Break
11:00 – 14:30 Study Tours
11:00 – 12:30 Workshops
12:30 – 14:30Lunch on trade show floor
14:30 – 15:003 rd VP Candidate Presentations (S/I)
15:00 – 15:30 Political Keynote (S/I)
15:30 – 17:30 Study Tours
15:45 – 17:15 Coffee Break in workshop rooms
15:45 – 17:15 Workshops
18:30 – 20:30 Mayor's Welcome Reception

Saturday, June 1

7:30 – 15:00Exhibitor Registration 7:30 – 14:15Trade Show 7:30 – 18:00Delegate Registration 7:30 – 8:30Breakfast

8:00 – 9:00Resolutions Plenary (S/I)
9:00 – 10:00Rural Plenary (S/I)
10:00 – 10:30Political Keynote (S/I)
10:30 – 11:00Coffee Break
10:45 – 13:15Study Tours
11:00 – 12:30 Workshops
12:30 – 14:00Lunch on the trade show floor
13:45 – 14:15Trade Show Prize Draw
14:30 – 16:00 Workshops
14:30 – 16:30Study Tours

Sunday, June 2

7:00 – 16:00Delegate Registration
7:00 – 8:15Breakfast Fundraiser – FCM Women in
Municipal Government Scholarship,
sponsored by Canadian Labour Congress
7:30 – 8:30Breakfast
8:30 – 10:45AGM & Elections (S/I)
10:45 – 11:15Political Keynote (S/I)
11:15 – 11:45Coffee Break served with boxed lunches
11:45 – 14:15Selection of candidates for Board of
Directors, Regional Chairs and PTA Executive
Representative
12:00 – 14:30Study Tours (For non-elected officials)
14:00 – 14:30FCM/Tree Canada Legacy Project
14:00 – 14:45Coffee Break
14:45 – 15:15FCM 2019-2020 Board Member – Election
results (S/I)
15:15 – 16:30Closing Plenary and Final Remarks (S/I)
18:00 – 23:30Host City Reception & Closing Dinner



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee From: Micha Gutmanis, Environmental Services Coordinator Date: 2019-01-09 File No: 9010-20-28501

Subject: Solar Panel Grant for Fraser Valley Regional District head office building

RECOMMENDATION

THAT the Fraser Valley Regional District Board accept a \$25,000 grant from Solar Now and proceed with the installation of a rooftop solar panel system at the Cheam Avenue office building.

STRATEGIC AREA(S) OF FOCUS

Support Environmental Stewardship Support Healthy & Sustainable Community **PRIORITIES** Priority #2 Air & Water Quality

BACKGROUND

As a signatory to the Climate Action Charter, the Fraser Valley Regional District (FVRD) has demonstrated a commitment to take action on climate change and to reduce greenhouse gas emissions from corporate operations. In the 2018 reporting year, the FVRD was awarded Level 3 recognition: 'Accelerating Progress on Charter Commitments'. Maintaining this level and ensuring the FVRD can continue receiving provincial carbon tax rebates, the FVRD needs to demonstrate continued improvements that moves the FVRD toward carbon neutrality. Installing solar panels on the roof of the FVRD's main office building would keep the FVRD within the Level 3 recognition and would help gain energy efficiency and cost savings.

The FVRD's head office building is situated in Chilliwack, where elected officials, staff, local businesses and members of the public go to for meetings, permits and license renewals. It is a great location to bring visibility and to demonstrate to the region that renewable energy is a viable option while offsetting corporate carbon emissions.

In 2016-2017 a feasibility study of the FVRD's office building was conducted and confirmed the solar panel potential for the building. The study analyzed the building's shading, wind and height characteristics, as well as the potential energy production and estimated costs and savings. It was determined that a solar energy system of approximately 23 kW would be appropriate for the building, with the potential for expansion to up to 40 kW.

DISCUSSION

An opportunity arose in mid-2018 when staff was made aware that Solar Now was accepting funding applications. Solar Now is a partnership between Clean Energy Canada, the Community Energy Association, and the North Growth Foundation to support solar installations on prominent public sites in BC communities. The goal of Solar Now is to demonstrate to BC communities that solar is a viable way to produce energy and take action on climate change. In November 2018, the FVRD was successful in obtaining a \$25,000 grant from Solar Now to carry out the FVRD's solar panel project.

An open procurement process has been conducted and a preferred proponent has been identified for the supply and installation of a 22.7 kW solar panel array. The project (Figure 1) is designed to allow a future expansion to a 40 kW system. A structural engineering report was obtained verifying the project is compatible with the building's roofing and load capacity, and the project has been reviewed and supported by the FVRD's electrical contractor. The Strata that is responsible for the FVRD main office building has also provided their support for the project.



Figure 1: Footprint of the 22.7 kW Solar Panel Array on FVRD office roof.

All appropriate building or electrical permits will be obtained prior to commencement of the installation. Installation is expected to occur in the first quarter of 2019 to meet the conditions of the Solar Now grant.

The installed solar panel array system will tie into the electrical grid, offsetting a portion of the power the building would otherwise require to operate. When the solar panels are fully operational, the system is expected to offset 7.25% of the building's energy needs. Although the solar panels may not be

publicly visible on the roof, the live energy production data and educational information will be displayed in the lobby or other public gathering area in the office for public viewing.

COST

The total cost of the solar panel supply and installation is \$55,798. Solar Now will contribute \$25,000 and the FVRD will contribute \$30,798 from money set aside from the FVRD's annual carbon tax rebate which is intended to be used for offsetting carbon emissions and improving air quality.

The estimated payback for the solar array system is approximately 9 years based on: a) the assumption that future increases in electricity rates will follow historical increases and b) acknowledging that the \$30,798 required today would have a higher value in 9 years if invested. The financial model estimates an annual energy savings of \$3,100 in year 1, growing at a rate of 4% per year to \$4,400 in year 9.

CONCLUSION

To commemorate the 50th anniversary of regional districts in the Province of British Columbia which occurred in 2017, the FVRD has been carrying out a series of activities to showcase the region's history and establish a legacy for our future. As a signatory of the BC Climate Action Charter, the FVRD is committed to becoming carbon neutral in all of its operations. The Solar Now \$25,000 grant that the FVRD has obtained will help offset a portion of the cost for a solar panel system to make it a more economical investment.

A solar panel system will not only provide power to our building, it would also help diversify our energy options, especially in times of power outages. This project will be a positive demonstration for the region, a legacy, and a key part of the region's future in promoting renewable energy.

COMMENTS BY:

Barclay Pitkethly, Director of Regional Programs

Reviewed and supported.

Mike Veenbaas, Director of Financial Services

Reviewed and supported. With the grant funding support, the project payback has been greatly shortened, making it a financially viable for FVRD to pursue.

Paul Gipps, Chief Administrative Officer

Reviewed and supported.



CORPORATE REPORT

To: Regional and Corporate Services Committee From: Lance Lilley, Environmental Planner Date: 2019-01-09 File No: 9850-25-2019

Subject: Nuisance Mosquito Control Pest Management Plan

INTENT

This report is intended to advise the Fraser Valley Regional District Board of information pertaining to the FVRD's Nuisance Mosquito Control Program. Staff are not looking for a recommendation and has forwarded this information should members want more clarification or to discuss the item further.

STRATEGIC AREA(S) OF FOCUS

Support Healthy & Sustainable Community Provide Responsive & Effective Public Services Support Environmental Stewardship

PRIORITIES

Priority #4 Tourism Priority #5 Outdoor Recreation Priority #3 Flood Protection & Management

BACKGROUND

The FVRD's Nuisance Mosquito Control Program operates under a five-year Pest Management Plan (PMP), as required by the Province's *Integrated Pest Management Act*. The PMP identifies where the FVRD can apply mosquito control treatment, the type of pesticide products permitted and how they can be used, monitoring requirements, and safety protocols. A new PMP is required for 2019-2024. The plan has been drafted (attached) and a consultation process is underway. The PMP does not differ significantly from prior PMPs and it will not result in substantive changes to the FVRD's Nuisance Mosquito Control Program operations.

DISCUSSION

The FVRD is required to have "confirmation" from the Province permitting the use of pesticides to treat mosquito larvae, even for a pesticide that is target-specific, non-residual, and harmful only to mosquito larvae, such as *Bacillus thuringiensis* (Bti) used in the FVRD's mosquito control program. In order to receive confirmation, a Pesticide Use Notice must be submitted and a PMP be prepared that is based on the principles of integrated pest management incorporating the following key components:

- A strategy that will be used to prevent organisms from becoming pests;
- The process that will be used to accurately identify pests targeted by the plan;
- A description of the monitoring program that will be implemented;
- The process for deciding when pesticide treatment is to be conducted;
- A description of the treatment methods that will be employed; and

• A method for evaluating effectiveness of the treatments.

Each of these components is described within the draft PMP. As required under the legislation, the PMP must also go through a prescribed consultation process prior to applying for the confirmation. As part of this process, the draft PMP has been distributed to key land managers and agencies within the affected area (e.g., Fisheries and Oceans Canada, Environment Canada, BC Hydro, Fraser Health, etc.) to allow for questions or comments. Ads were inserted into all local newspapers about the PMP. And copies of the plan were distributed to First Nations within the affected area, either via email, regular mail, or through the People of the River Referrals Office's web portal.

Following completion of the consultation process in mid-January, the draft PMP will be revised, if necessary based upon the comments received, and a Consultation Report will be prepared for the Province. This will get submitted to the Province, along with a Pesticide Use Notice application and the application fee so as to receive confirmation prior to this year's nuisance mosquito control. This confirmation will be valid from 2019 to 2024.

In addition to the PMP, a procurement process is also underway seeking proposals from qualified proponents for mosquito control operations. The FVRD's contract with the prior contractor, Morrow BioScience Ltd., expired at the end of 2018. A contract for the selected proponent will be brought forward for the Board's approval in February or March, 2019 so as to have the contractor in place in time for the 2019 nuisance mosquito control season.

COST

The cost associated with a Pesticide Use Notice application (\$2000), plus newspaper advertising on the PMP consultation (\$4400) is approximately \$6400. The cost associated with a new contract required for the 2019 treatment season remains outstanding pending completion of the procurement process.

COMMENTS BY:

Barclay Pitkethly, Director of Regional Programs

Reviewed and supported.

Mike Veenbaas, Director of Financial Services

Reviewed and supported.

Paul Gipps, Chief Administrative Officer

Reviewed and supported



www.fvrd.ca | info@fvrd.ca

FVRD File: #9850-25-2019

Pest Management Plan Nuisance Mosquito Control

1 May 2019 - 30 April 2024

Confirmation No. 600-0009-19/24 (DRAFT)



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1. INTRODUCTION

1.1 Overview of Mosquito Larvae Control

Mosquitoes are insidious summertime pests that live and breed in and around wet environments. The proximity of mosquito producing areas to human habitation, business, and recreation sites often requires the deployment of programs designed to reduce the mosquito populations to allow the surrounding areas to be more tolerable during the times of year the mosquitoes are out.

There are many different types of mosquitoes, with different species preferring different types of breeding habitats. Some mosquitoes breed in coastal brackish water, some breed in wet forested areas, some breed in water collected in backyard containers. In the Fraser Valley, the greatest source of nuisance mosquitoes is low-lying areas along rivers and streams that experience fluctuating water levels. Floodplain mosquitoes lay their eggs on the wet soil along a riverbank after the water levels have started to recede in the summer. The eggs lay dormant until water levels increase again, which often occurs the following spring during freshet, but the eggs can survive for several years. When eggs go underwater, it triggers them to rapidly hatch into larvae. Mosquito larvae remain within the water where they eat voraciously, grow in size, and go through several molting stages (instars) within approximately one week. After the fourth instar stage, the larvae change into a pupa, and then soon emerge as an adult mosquito, usually 1-2 weeks after the water levels began to rise (Figure 1).



Figure 1. Mosquito life cycle. Note that times provided are approximate and may vary depending on weather conditions and water temperatures.

Unlike historical treatment efforts that attempted to poison adult mosquitoes after they emerged and dispersed, most current mosquito control programs target the mosquito larvae while they are still in the water column. The most common active ingredient used is a bacterium naturally found in soils known as *Bti* (*Bacillus thuringiensis* subspecies *israelensis*). Pesticide products formulated with this bacterium are added directly to the water where the larvae are found. Mosquito larvae ingest the

bacteria and quickly die due to a toxic protein that *Bti* produces when inside the alkaline environment of the mosquito's digestive system. *Bti* is extremely species-specific and does not affect most other insects, honeybees, fish, birds, or mammals¹, even if accidentally ingested. *Bti* has no toxicity to people and can be applied safely to mosquito habitat without negative impacts on food crops or water supplies², and can even be used in organic farming operations³. Other similar larvicides may also be used for mosquito control purposes, such as *Bacillus sphaericus* (*Bsph*).

Most of the mosquito larvae treatment conducted under this program occurs on public land, as that is where the nuisance mosquito typically becomes active. This requires that all activities be conducted under a Pest Management Plan (PMP) and all application staff to be properly trained and certified within BC.

1.2 Purpose of this Plan

The land base in the Fraser Valley Regional District (FVRD) lends itself to mosquitoes being an historical and significant summertime pest. The Fraser Valley is defined by the presence of the Fraser River, which experiences high water levels each spring due to the snowmelt occurring upstream within the Fraser River Watershed. During this annual freshet, floodwaters and seepage waters wet the adjacent lowland areas, creating a band approximately 5 km wide down the middle of the region, comprising approximately 3,000 ha, that produces huge swarms of nuisance mosquitoes each year. Since these mosquitoes emerge within close proximity of the large number of people that live, work, or recreate within the Fraser Valley, these mosquitoes can result in significant annoyance to residents, businesses, and visitors.

The region continues to grow with regards to population, economic opportunities, and recreation tourism. During years of high mosquito infestation, the impact can be considerable. Consequently, the FVRD has managed a Nuisance Mosquito Control Program since prior to regional district amalgamation in 1995. Rather than eradication, which is neither possible nor ecologically desirable, the goal of this program is to reduce the quantity and duration of nuisance mosquitoes to tolerable levels.

This Pest Management Plan has been prepared to describe the FVRD's Nuisance Mosquito Control Program and to obtain authorization through the Ministry of Environment and Climate Change Strategy under the *Integrated Pest Management Act*.

It is important to note that the target of the FVRD's mosquito control program is nuisance mosquitoes that typically emerge from floodplain waters and seepage areas. While there may be future need for controlling other types of mosquitoes within the region, such as mosquito vectors involved in the transmission of West Nile Virus, doing so would be considered outside the scope of this PMP and would be conducted under the direction and authority of the Minister of Health under their own PMP.

¹ Health Canada, 2013

² USEPA, 2016

³ CGSB, 2018

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1.3 Geographic Boundaries of Plan Area

The FVRD covers approximately 115,000 hectares in the southwest corner of BC (Figure 2). The region includes six municipalities (the Districts of Mission, Hope, and Kent, the Cities of Abbotsford and Chilliwack, and the Village of Harrison Hot Springs), and eight Electoral Areas. It is a vast area bisected by the mighty Fraser River. Approximately 296,000 people live within the region, the majority of which are concentrated near the banks of the river or its tributaries, much of which is productive mosquito breeding habitat.

This PMP will cover all public lands throughout the FVRD where nuisance mosquitoes breed⁴. Maps of the larval development sites where pesticides may be considered for mosquito control purposes under this PMP are provided in Appendix I.



Figure 2. Map of the FVRD.

1.4 Term of Plan

This PMP covers a 5-year term from May 1, 2019 to April 30, 2024. All mosquito control activities carried out by the FVRD and its Contractors will be in accordance with this PMP for its duration.

⁴ Floodwaters that occur over private property may also be treated under this program with the approval of the land owner. Treatment may also be conducted on First Nation lands with the approval of the First Nation.

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1.5 Contact Information

The FVRD mosquito control program is conducted by mosquito control contractors. Within the FVRD, the primary contact for information related to this Pest Management Plan is:

Lance Lilley, Environmental Planner 45950 Cheam Ave. Chilliwack, B.C. V2P 1N6 Email: <u>Ililley@fvrd.ca</u> Phone: 604-702-5006

2. INTEGRATED PEST MANAGEMENT

The FVRD's Nuisance Mosquito Control Program is based on the principles of Integrated Pest Management (IPM), in that the most environmentally sensitive methods of control are considered first. Over the years, in an effort to eliminate chemical applications, the program's emphasis has shifted from targeting adult mosquito populations to increased monitoring of breeding sites and subsequent treatment of mosquito larvae. By managing potential mosquito breeding sites to prevent mosquitoes from becoming pests, monitoring their populations, and using a biological larvicide to supress mosquito populations to acceptable levels, this program is in keeping with IPM principles.

There are a number of Acts and Guidelines that govern mosquito control, either directly or indirectly. Some of these are at a federal level (e.g., *Pesticide Control Products Act* which summarizes the registration and availability of pesticides and prohibits application under unsafe conditions). Some are at a local level (e.g., *FVRD Mosquito Abatement Bylaw #0468, 2001*, which provides statutory approval to the FVRD under the *Local Government Act* to provide mosquito control services – see Appendix II).

The primary regulatory tool governing the use of pesticides in BC, including requirements for Pest Management Plans, is the *Integrated Pest Management Act (IPMA)* and its associated *Regulation (IPMR)*. Section 58(2) of the *IPMR* identifies the following six elements that are to be included within a PMP:

- 1. A strategy that will be used to prevent organisms from becoming pests;
- 2. The process that will be used to accurately identify pests targeted by the plan;
- 3. A description of the monitoring program that will be implemented;
- 4. The process for deciding when pesticide treatment is to be conducted;
- 5. A description of the treatment methods that will be employed; and
- 6. A method for evaluating effectiveness of the treatments.

Each of these elements is discussed below.

2.1 Prevention

Preventing pests from occurring before they can become pests is the optimal method of pest management. In addition to larviciding, the primary treatment method as part of the FVRD's Nuisance Mosquito Control Program which is discussed in a later section, preventative actions include decreasing mosquito breeding habitat, increasing the abundance of natural mosquito predators, and conducting public education.

Removing mosquito breeding areas

Mosquito breeding habitat is critical for the production of mosquitoes. With respect to floodwater mosquitoes, this habitat typically consists of low-lying floodplain or seepage sites along a river corridor that becomes periodically wetted during freshet or snowmelt conditions. In prior decades, mosquitoes were so devastating that drastic and expensive large-scale measures were taken to reduce their numbers through any means necessary, including draining lakes and filling in wetlands. These large-scale projects are no longer conducted as part of pest control efforts, but smaller scale habitat modifications can still be considered to reduce local mosquito production.

For example, landowners who have floodwater mosquito breeding sites on their property may have the opportunities to reduce standing water by modifying the drainage of the site. These projects are encouraged, if they can be conducted by following all local, provincial, and federal legislative requirements. Other opportunities to reduce mosquito breeding areas is by working with local environmental groups undertaking salmonid enhancement projects that restore or enhance salmon habitat within the region. By incorporating design features into these projects such as steep-sided banks that reduce the surface area of wetted soil exposed to water fluctuations, these projects can benefit local fish species as well as reducing mosquito breeding potential at the site.

In reality though, there are few instances in which habitat modification would be possible and effective at having a measurable impact on the region's mosquito populations. Consequently, this is not considered to be a significant component of the FVRD's mosquito control program.

Increasing the abundance of mosquito predators

Restoring habitat features to increase the presence of natural mosquito predators helps to provide some level of control on local mosquito abundance. A single bat can eat hundreds of mosquitoes each night. Restoring habitat to increase the abundance and diversity of native amphibians, dragon flies, salmonids, etc. would help to reduce the population of mosquitoes by increasing the predation pressure on either adult mosquitoes or their larvae.

The FVRD encourages ecosystem enhancements that improve biodiversity and ecological resilience by controlling invasive species and by partnering with organizations such as the Fraser Valley Watersheds Coalition to restore and enhance habitat values. As with modifying mosquito breeding habitat however, these efforts are encouraged and may result in local benefits on mosquito populations, but do not replace the need for regional larvicide treatments.

Public education

Informing residents about the program, as well as about measures they can undertake for their own protection are important aspects of the FVRD's mosquito control program. Adulticiding, when it was conducted 20+ years ago, was highly visible and done in full view of homeowners. The current program of treating mosquito larvae in remote areas often away from public view requires more active outreach and education to inform the public about the program.

The primary methods for dissemination of information to the public are the media (both traditional and social) and personal communication.

Personal Communication: Personal communication is perhaps the most important method of public relations. In the field and in the office, Mosquito Control Technicians are regularly approached by residents with a variety of questions and challenges. These interactions also provide the opportunity to share information with residents regarding nuisance mosquitoes and their habitat, about the FVRD's Nuisance Mosquito Control Program, and about measures they can take reduce mosquito exposure or reduce mosquito breeding sites on their property, such as emptying containers or tires. Homeowners and residents are also encouraged to consider habitat modifications to restore biodiversity on their property or reduce standing water.

In addition, the FVRD manages a dedicated email (<u>mosquitoes@fvrd.ca</u>) and hotline (1-888-733-2333) for members of the public who would like to report high levels of mosquitoes. This provides an opportunity to not only collect information on hotspots that may indicate new or unknown breeding sites, but also to answer questions or to arrange site visits by field technicians. Contractors may also attend community events or farmers markets to further engage the public.

Media & Social Media: While local newspapers or radio stations are still utilized, social media has become more and more important in disseminating information about the program. The FVRD's mosquito control contractors have active Facebook[™] and Twitter[™] accounts that are regularly updated with information about current water levels, mosquito larvae conditions, tips for homeowners, and where the mosquito control technicians are conducting treatments. Because monitoring and larval treatments typically occurs out of the public eye, it is important to reassure the public that the FVRD's Mosquito Control Technicians are in the field and active.

2.2 Pest Identification

Accurate identification of the target pest is a critical element of an effective and efficient IPM program that avoids negative impacts on non-target species. There are approximately 3,100 species of mosquitoes world-wide and at least 17 species within the FVRD (Table 1)⁵. The most predominant mosquito species in the Lower Mainland are *Aedes vexans* and *Aedes sticticus*, commonly known as floodwater mosquitoes or nuisance mosquitoes. It is these floodwater mosquitoes that are the focus of the FVRD Nuisance Mosquito Control Program. Mosquitoes that breed in habitats other than the floodplain (e.g., storm drains), such as species of *Culex* which are known vectors of West Nile Virus, will be controlled, if needed, under the authority of Fraser Health.

⁵ An 18th species, *Aedes japonicus*, has been recorded within the region but its distribution and abundance remain uncertain.

Species	Habitat	Predominant Prey
Aedes atropalpus	rock pools, artificial pools	Mammals
Aedes cinereus	semi-permanent mixed cattail / sedge marsh, sphagnum bog	Mammals
Aedes communis	forest pools / deciduous	Mammals
Aedes fitchii	most semi-permanent pools	Mammals
Aedes sierrensis	tree holes, artificial containers	Mammals
Aedes sticticus	floodwater pools and riparian margins	Large mammals, incl. humans
Aedes vexans	floodwater grasses	Birds/Mammals
Anopheles earlei	wooded areas / pools with floating debris	Mammals
Anopheles punctipennis	wooded areas / pools with floating debris	Mammals
Coquillettidia perturbans	permanently wet marshes, cattails	Birds/Mammals
Culex pipiens	water containers, even sewage and manure polluted water	Birds
Culex tarsalis	permanent / semi-permanent ponds, irrigation, ditches	Birds/Mammals
Culex territans	permanent pools, artificial containers (see C. tarsalis)	Amphibians
Culiseta impatiens	semi-permanent pools / bogs, shaded forest pools	Mammals
Culiseta incidens	diverse - open or shaded pools, permanent streams / ditches	Mammals
Culiseta minnesotae	found in most water, containers, pools, ponds	Birds
Culiseta morsitans	found in most water, containers, pools, ponds	Birds

Table 1. Known mosquito species within the FVRD.

Aedes vexans and A. sticticus are active in the summer throughout the spring freshet and successive high water events. A high water event is when water levels exceed the bankfull depth and moves into and/or past the first band of riparian vegetation. Within the Lower Fraser River, river level variation is primarily governed by snowmelt occurring in the upstream portions of the Fraser River Watershed occurring elsewhere in BC. Frequent and large amounts of local precipitation can also affect river levels, though typically to a lesser degree than snowmelt.

As opposed to other mosquitoes, *A. vexans* and *A. sticticus* lay their eggs on damp substrate in areas with a high flooding potential (thus the term 'floodwater mosquitoes'). New hatches of mosquitoes can occur with each successive peak in the Fraser River water level as more soil gets wetted and more mosquito eggs become activated.

The most reliable and effective means of determining whether a mosquito larva is a floodwater species or not is the habitat where the larvae is found and the time of year. The main mosquito habitats within the FVRD are floodwater habitats, seepage habitats, local habitats (e.g., swimming pools, used tires), and standing water habitats (e.g., stagnant ditches or swamps). Only floodwater and seepage habitats are significant for the breeding of nuisance mosquitoes (*A. vexans* and *A. sticticus*) in the Fraser Valley. Mosquito larvae observed in floodwater or seepage sites during the spring or early summer, shortly after river levels has begun rising during the annual freshet, can generally be considered to be one of those two nuisance species.

Floodwater Habitats

As mentioned earlier, floodwater sites are prevalent along the Fraser River corridor of the FVRD, providing abundant mosquito development habitat. As water levels rise, typically during freshet, areas along the banks or the multitude of islands within the Fraser River become saturated.

Of all the habitat types in the FVRD, floodwater habitats are by far the most productive for nuisance mosquitoes. Larval densities can reach more than 4,000 per litre of water, or approximately eighty million per hectare⁶. The mosquito species that breed in these areas are mostly of the genus *Aedes*, common human-biters. This is also the easiest habitat in which to predict activity, as it generally becomes active when the river levels rise.

Seepage Habitats

As the river levels rise, so do the groundwater levels. Higher groundwater can manifest itself as surface water in low-lying areas on the protected sides of the dykes that surround the Fraser River, Vedder River, around Nicomen Slough, and Norrish Creek. It can be challenging to predict mosquito activity within these sites because seepage is not necessarily correlated to Fraser River levels, which can be easily monitored with river gauges. Rainfall can exacerbate the water levels in seepage habitats: if the ground is already saturated, then the rain water will sit on the surface creating even more breeding areas.

Seepage habitats tend to produce similar species of mosquitoes as floodwater habitats (i.e., *Aedes sp.*). These habitats tend to produce fewer overall mosquitoes, but the challenge these sites represent from a treatment perspective is that the water in them is usually warmer. Warmer water leads to faster larval development, and hence decreases the window of opportunity to locate and treat these sites while mosquitoes are still in larval form. Although slightly less productive than floodwater habitats, mosquito annoyance due to seepage sites can be more noticeable due to the fact that the sites are typically closer to residential areas or where people are working outdoors.

2.3 Monitoring

Monitoring of water levels and mosquito larvae development is essential for an efficient and effective floodwater mosquito control program and is the key component that allows field technicians to know where to treat as well as when to treat. If treatments are applied too early, the larvae will not have started feeding yet and the product will be wasted and ineffective; if applied too late, the larvae will be in the pupal stage (i.e., non-feeding stage) or will have already hatched into adults. Monitoring of water levels and larvae development is critical for the judicious and timely application of larvicide and for the flexibility to adjust applications in response to species or environmental conditions as required.

This program conducts three types of monitoring: environmental conditions, larvae development, and adult mosquito presence.

⁶ Wood, Dang, and Ellis, 1979.

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Monitoring Environmental Conditions

Fraser River levels are indirectly affected by ambient temperature and precipitation accumulation that occur near snow basins associated with the Fraser River. The weather stations at Mission, Hope, and Prince George serve as representative sites that provide up-to-date information on river levels. The Prince George region is a particularly important site to monitor because it is close in proximity to the headwaters of the Fraser River. Typically, weather experienced in Prince George during early spring/early summer will be reflected in Fraser River levels approximately a week later.

High ambient temperatures in snow basins associated with the Fraser River, such as those around Prince George, are also important to monitor as it can result in significant snowmelt in the early portion of the season. As such, a large volume of water is added to the Fraser River, increasing levels, and lending to mosquito development site creation. Precipitation is also important to monitor as it can contribute to water levels, particularly in seepage sites or when the ground is already saturated.

Precipitation can also affect the severity of a mosquito season in a more indirect manner. If precipitation occurs during an aerial campaign, it may result in a delay. Poor visibility will ground the helicopter until it is safe, and pesticide cannot be disseminated during a rain event because the product will coagulate and potentially obstruct the helicopter's hoppers. Wet foliage will also lessen the amount of pesticide that penetrates the canopy and gets into the target waters.

Monitoring Larval Mosquitoes

While environmental conditions provide a valuable indicator of larvae development, actual sampling for, and counting, mosquito larvae is still essential. In order to maximize treatment success, it is imperative to know where precisely nuisance mosquito larvae are located, what their density is, and what stage of development they are in.

All known mosquito development sites are monitored by Mosquito Control Technicians, at a minimum on a weekly basis from May through August, and entered into a database. During high water years, sites may be monitored more frequently, depending on environmental conditions (e.g., precipitation, ambient temperature). Using a standard dipper, field technicians record the number of larvae within the dip sample, describe the larval development stage (instar), the location (using GPS coordinates), the date, relevant weather information, the mosquito species (if possible), and make any field observations that might assist with the site assessment.

From these results, treatment appropriateness and timing can be determined. If the larvae have not yet hatched, or they are too early in their developmental cycle, a return date will be set to continue monitoring.

Monitoring Adult Mosquitoes

There are three main methods used to monitor adult mosquito populations: a) public complaints; b) landing biting counts; and, c) adult trapping. These methods combine to give an idea of mosquito emergence, abundance, and species distribution.

- a) **Public Complaints:** During years of high water, the greater than normal mosquito activity often elicits a multitude of complaint phone calls to the FVRD's Mosquito Control Hotline. The address and contact information of these callers is recorded so that follow-up can be conducted. The numbers of calls received is often correlated with river levels, which relates to the relative abundance of mosquitoes emerging in a year. The calls can also indicate specific locations where adult mosquitoes are problematic, helping to identify hot spots of mosquito activity to direct staff to new, potentially unmapped, mosquito development sites.
- b) Landing Biting Counts: Landing biting counts entails a Mosquito Control Technician counting the number of mosquitoes that land on an exposed forearm in one minute. The standard measure used to signify high annoyance in three bites per minute. While not typically performed as a metric of adult mosquitoes, technicians use this method when discussing mosquito levels with the public as a way of determining relative abundance or trends.
- c) **Adult Mosquito Traps:** The FVRD utilizes a series of 'New Jersey Light traps' placed strategically around the region which are regularly monitored by field technicians. Traps are monitored every 2-3 weeks throughout the season beginning as soon as adult nuisance mosquitoes emerge, usually in May or June, and continues throughout the summer. The traps help to determine relative mosquito abundance, which acts as a quality assurance/quality control measure for larval mosquito control. The results are also used to compare intra- and inter-annual nuisance levels of mosquitoes, to determine the relative species composition within the region, and to note any changing trends or new species.

2.4 Treatment Thresholds

Determining if mosquito larvicide will be applied to a site, and if so, determining precisely when and where it will be applied, is a critical element of an IPM approach. Mosquito development sites are evaluated for possible treatment based on a number of criteria and treatment thresholds related to productivity, species of mosquito produced, and proximity to people.

Productivity

Productivity is the first determination to be made regarding a mosquito development site during normal conditions. Productivity is measured as the number of mosquitoes produced during peak activity. This number is determined as the potential density of larvae⁷ multiplied by the approximate size in hectares of the development site. Higher potential for mosquito infestation equates to a higher treatment priority. Many of the islands in the Fraser River are high priority based solely on size; many are more than 200 hectares and the perfect development grounds for *A. vexans*, and *A. sticticus*. Treatment is considered if greater than five larvae of target mosquito species are recorded per dip.

Target Species Presence

Most mosquitoes found in the FVRD region are not considered a nuisance. The target species of the FVRD Nuisance Mosquito Control Program are part of the floodwater complex belonging to the genus

⁷ Density is measured as the number of larvae observed per standard 350 ml dip.

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Aedes, known biters of people and livestock. These mosquitoes are found in flood and seepage water areas, mostly those associated with larger systems (Fraser River, Vedder River, Stave Lake, etc.).

Proximity to People

An adult floodwater mosquito has a dispersal limit of approximately 3 km from their larval development site. Consequently, larval development sites within 3km of key residential, tourism, or agricultural areas are considered within the threshold to treat. Prevailing winds may extend this dispersal range and are taken into consideration.

Of the highly productive sites, priority is given to those that are closest to residential areas. For obvious reasons, these sites draw the most public complaint as the mosquitoes reduce enjoyment of their property or their community. Agricultural properties are also prioritized, as mosquitoes can have a profound effect on all areas of agriculture. In years of heavy mosquito infestations, livestock, milk, and poultry production can be adversely affected. Fruit and vegetable production is also affected from the harvesting perspective as many farmers find it difficult to hire and keep workers in a field that is inundated with adult mosquitoes. Also considered is proximity to sites used for recreation or tourism, such as campgrounds, boating, fishing, cycling, walking, or hiking. These activities, and the economic revenue they represent to the region and quality of life it offers, can be impacted during years with large mosquito populations.

Decision Making

As a general guideline, treatment shall be considered in sites that satisfy the above proximity requirements when water dip samples have confirmed the presence of late instar *Aedes sp* mosquito larvae at or greater than the <u>treatment threshold of 5 larvae per 350 ml dip</u>. Exceptions may be made to this threshold however and a certified applicator working for the FVRD will make the final decision as to whether or not larval treatment is justified in an area.

The intent of the following flowchart (Figure 3) is to assist regulators and FVRD staff with decisionmaking regarding mosquito treatment for common nuisance or floodwater mosquitoes. Note that this chart is not intended for treatment of mosquitoes for purposes of disease reduction or public health, only treatment of nuisance mosquitoes.



Figure 3. FVRD mosquito control contractors are expected to follow this flowchart when deciding to conduct mosquito treatment in a site or not. Factors or conditions that may require modification to this flowchart include: disease occurrence; unforeseen biological or environmental conditions; new legal requirements; budgetary constraints; or availability of suitable larvicides and susceptibility of mosquito populations to larvicides.

2.5 Treatment Methods

The FVRD Nuisance Mosquito Control Program focusses on controlling floodwater mosquitoes while they are still in a larval stage. Adulticiding, or 'fogging', which is considered the least efficient, least target-specific, and least effective mosquito control treatment and is associated with a plethora of human health and environmental impacts⁸, is not utilized as part of this program. Fortunately, modern mosquito control methods that target the mosquito larvae using bacterial agents have much less impact on the environment and are much more effective at controlling the abundance of nuisance mosquitoes.

If treatment thresholds are satisfied, the certified Mosquito Control Technician then has to decide whether ground treatments or aerial treatments are preferred for the particular location.

⁸ Culex Environmental Ltd, 2010.

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Hand Treatments

Hand, or ground, treatment is the process of applying larvicide into mosquito larvae breeding sites using a calibrated backpack applicator or other handheld device (e.g., bucket). Access to breeding sites is typically by foot or boat. This treatment method is generally highly effective and efficient; however, depending on the site, can be relatively time-consuming and challenging based on access, terrain, and size of area requiring treatment.

Unless conditions require an alternative application method, ground treatments are preferred for a number of reasons: (1) application rates are lowered, thereby reducing pesticide use; (2) application timing can be more specific, thereby increasing efficacy; and (3) application precision is dramatically increased, again reducing pesticide use.

Aerial Treatments

When large areas become active simultaneously, particularly when water temperatures are warmer than usual creating faster larvae development, or when breeding sites are prohibitively difficult to access, treatment can be conducted by air rather than by ground. Aerial application of larvicide within the FVRD must utilize a fixed hopper attached to a helicopter⁹, calibrated to release pesticide at a predefined rate. This allows larvicide to be applied over large areas in a short amount of time and allows easier access to breeding sites that cannot be accessed by ground or boat. Aerial treatments are effective, but due to costs associated with helicopter usage and higher application rate (to penetrate vegetation hanging over the water) it is only conducted when necessary.

An important emerging technology in the mosquito control field is the application of un-manned aerial vehicles (drones) for larval mosquito control in select locations. Current technology allows for small-scale application of liquid and granular payloads in areas that are deemed too small for traditional aerial applications (helicopters) and too large or otherwise inaccessible to ground treatments. All un-manned aerial vehicle treatments will be conducted strictly adhering to Transport Canada Regulations and certification and training requirements. Only registered Bti products can be used for this application.¹⁰

2.6 Evaluation

Evaluating treatment success is the remaining required element of an IPM approach in order to identify opportunities for improving and refining the program.

The most direct and effective method used to determine the success of mosquito larvicide treatment is to conduct follow-up larval sampling where the larvicide had been applied. Post-treatment monitoring is usually conducted within 24-48 hours of treatment using the same methods described for pre-treatment monitoring. Larvae counts collected post-treatment are compared to monitoring

⁹ Equipment classified as a slung load or a jettisonable load will not be utilized to improve application efficiency and reduce

pesticide usage. ¹⁰ Un-manned aerial vehicle use, at the time of writing, is not yet a label-permitted activity, but label restrictions are anticipated to be updated and amended to address this emerging application method. Un-manned aerial vehicles may be utilized as part of this program if pesticide labels are updated to permit this application method.
results collected pre-treatment, and depending on the information collected, treatment product or methods could be adjusted, and re-treatments may be conducted as necessary.

Treatment success can also be evaluated, albeit more indirectly, by adult mosquito trap counts and complaint calls received via the hotline. This information can help determine the effectiveness of control efforts and can help identify potentially previously unknown mosquito breeding sites.

As will be described in Section 3, the FVRD's Nuisance Mosquito Control Program's biological bacterial agents belong exclusively to the genus *Bacillus*. As these products have shown very limited or no adverse effects on non-target species when applied according to label directions, post-treatment evaluation of environmental effects is not typically undertaken as part of the program.

3. OPERATIONAL INFORMATION

In addition to the elements described in the previous section, the *Integrated Pest Management Regulations* also require a PMP to include the following critical information: identification of the pesticides proposed under the PMP; methods utilized for safe transport, handling, use, and disposal of the pesticides; and strategies to ensure environmental protection (*IPMR 58(3)*).

Proposed Treatment Products:

The two active ingredients approved for use under this PMP are *Bacillus thuringiensis israelensis (Bti)* and *Bacillus sphaericus (Bsph)*. Both of these active ingredients have been thoroughly studied and are commonly used in IPM programs as alternatives to chemical pesticides.

The primary product in use at the FVRD for controlling mosquitoes is *Bti*, a natural soil-borne bacterium that is specifically toxic to larvae of nuisance mosquitoes. It is added to the water where larvae are present, usually in a granular formulation where it is attached to an inert carrier (typically corn granules). When ingested by the larvae, the endotoxin produced by the bacteria is stimulated by the unusually alkaline conditions of the mosquito gut, resulting in larvae paralysis and death. Because most aquatic invertebrates do not have alkaline guts, ingestion of either the *Bti* pellet or of infected mosquito larvae has no toxic effect. *Bti* only remains active in the water column for a few days however, so accurate monitoring of larvae development is essential so that treatment occurs at the appropriate moment.

Bsph is a secondary product considered by the FVRD. This product has a similar mode of action to *Bti* and is also very specific to mosquitoes; however, it exhibits greater residual activity meaning that it can persist in the receiving environment for much longer. While not previously used as part of the FVRD Nuisance Mosquito Control Program, this longer persistence allows *Bsph* to have potentially useful applications, but its higher cost is a substantial consideration and any use of *Bsph* would need to be justified. Table 2 summarizes the pesticide formulations for *Bti* and *Bsph* that may be used as part of this program. See Appendix III for Material Safety Data Sheets on these products.

Product Trade Name	Active Ingredient	PCP No.	Active Ingredient Concentration in Product	Application Rate of Product	Area to be Treated (ha)	# of Permitted Applications Per site	Quantity of Product
Vectobac 200G	Bacillus thuringiensis Serotype H-14	18158	200 ITU/mg	3.0-10.0 kg/ha	3,000	15	15,000 kg
Aquabac 200G	Bacillus thuringiensis Serotype H-14	26863	200 ITU/mg	2.5-20.0 kg/ha	3,000	15	15,000 kg
Aquabac XT	Bacillus thuringiensis Serotype H-14	26860	1,200 ITU/mg	300-2,400 ml/ha	3,000	15	5,000 L
Vectobac 1200L	Bacillus thuringiensis Serotype H-14	21062	1200 ITU/mg	0.25-1.0 L/ha	3,000	15	5,000 L
Vectolex CG	Bacillus Sphaericus, Strain 2362	28008	50 ITU/mg	5.6-16.8 kg/ha	3,000	TBD	TBD

 Table 2. Pesticides approved for use by the FVRD under this Pest Management Plan¹¹

Both *Bti* and *Bsph* are considered extremely safe and effective larvicides. In general, the specificity of these larvicides for mosquitoes and their lack of effect on non-target fauna given allowable application rates are well documented.¹² While adverse effects have been recorded on a few invertebrate species, these impacts were only observed when application rates were many hundreds times greater than the allowable application rates.¹³ Neither mammals nor fish are adversely affected by either bacterial species.¹⁴

Pesticide Applications:

The following terms and conditions apply for the application of pesticides as part of this program:

- The use of pesticides shall be for the purpose of controlling larval stages of *Aedes* spp., as well as other nuisance mosquito species including *Culex* spp., *Culiseta* spp., and *Anopheles* spp.
- Pesticide use is approved for the locations shown in the Treatment Area Maps (Appendix I).
 - Aerial use of Aquabac 200G, Vectobac 200G, and Aquabac XT may occur at locations outside the treatment area so long as detailed maps of proposed use areas have been submitted to the Deputy Administrator at least two working days prior to proposed pesticide use, the maps of the proposed use area are posted at the permittee's office, and the Deputy Administrator does not otherwise reject the proposed use.
 - Ground-based use of Aquabac 200G, Vectobac 200G, and Vectobac 1200L may occur at locations outside the treatment area provided that detailed maps of the treated

¹¹ Product use quantities are based on maximum potential needs and not anticipated needs. The lowest application rates and quantities possible will be used to achieve permit and *IPM Act* objectives.

¹² Mathavan & Velpandi, 1984; Mulla et al., 1984; Ali & Nayar, 1986; Aly & Mulla, 1987; Karch et al., 1990; Lacey & Mulla, 1990; and Mulla, 1990

¹³ Lacey and Mulla, 1990

¹⁴ Lacey and Siegel, 2000; Lacey and Merritt, 2003; Brown et al., 2004; Hurst et al., 2007; Sternberg et al., 2009

FVRD Mosquito Pest Management Plan 2019-2024

areas are submitted to the Deputy Administrator and are posted at the permittee's office within two working days after the pesticide use.

- All pesticide use must comply with the directions on the product label and shall be restricted to registered purposes and application approaches.
- Aquabac 200G, Vectobac 200G, Aquabac XT, and Vectobac 1200L shall be applied to water bodies where water dip samples have confirmed the presence of *Aedes* sp mosquito larvae at or greater than the treatment threshold of 5 larvae per 350 ml dip. Records of larvicide use will be kept and post-treatment surveys shall be performed to assess the control efficacy.
- Aquabac 200G, Vectobac 200G, Aquabac XT, and Vectobac 1200L may be used in all water bodies according to the product label with a primary target of 3rd or 4th instar (i.e., late larvae stages) to allow as much natural predation of larvae as possible prior to adult emergence. If the level of the Fraser River passes 4.5m at the Mission gauge, then all instar may be targeted.
- Prior to the start of any control season, and at regular intervals throughout, all equipment used for application will be properly calibrated.
- Contractors will be directed to refer to the product label for appropriate application rates for both ground and aerial applications.

Environmental Protection:

Over the past few decades, environmental regulations have become considerably stronger, more knowledge has been gained about environmental impacts, and the punishment for mismanagement of chemicals and other pollutants has increased. Substantial efforts are made to avoid pollution events and to mitigate the potential impacts of such events. Table 3 outlines potential accidents (including pollution events), potential harm to the environment, and the preventative and mitigation procedures put in place as part of the program. Spills of any material (e.g., fuel) that result in impacts not authorized by or consistent with this permit will be immediately cleaned up and reported to Provincial Emergency Program at 1-800-663-3456. The Deputy Administrator will be provided with reports on the spill, clean-up activities, and decontamination actions.

Accident	Activity	Impact	Prevention and Mitigation
Spill	Transportation, Storage, or Application	Site contaminationSoil contamination	 Proper storage facility Proper transportation equipment Training all staff in Workplace Hazardous Materials Information System (WHMIS) Appropriate containers Minimize movement
Leak	Transportation, Storage, or Application	Site contaminationSoil contamination	 Proper storage facility Proper transportation equipment Training all staff in WHMIS Appropriate containers Minimize movement Complete equipment maintenance

Overspray ¹⁵	Application	 Damage to sensitive habitat Residential/agricultural intake contamination 	 Strict application procedures All personal holding Pesticide Applicator Certificate (Mosquito and Biting Fly)
Misapplication	Application	 Illegal application Damage to sensitive habitat 	 Strict application procedures All personal holding Pesticide Applicator Certificate (Mosquito and Biting Fly)

Mixing and handling of pesticides provides an opportunity for accidental spillage. The following instructions will be provided to all personnel involved in the handling of larvicide products to limit the potential for spills and reduce wastage:

- Product will be stored in a dry, temperature-controlled facility that remains locked and with adequate signage.
- ALWAYS read and follow the label before starting. Follow label recommendations for personal protection measures, application rates, and safety procedures.
- Open container bag with a sharp knife (do not tear).
- Transfer product to application equipment in a dry and stable location.
 - Do NOT transfer over water.
 - Do NOT allow product to become wetted before application.
- If any product is spilled STOP IMMEDIATELY and collect the spilled product.
- Any spilled granules should be collected and used first via hand application (to avoid damaging application equipment).
- Dispose of container according to label recommendations.

Additional precautions that will be undertaken to ensure environmental protection include:

- Where treatment areas overlap with identified Species at Risk Critical Habitat, contractors will refer to the appropriate Recovery Strategy or Action Plan and ensure that mosquito larvicide treatments using a *Bacillus* product is not listed as an activity likely to destroy the species' Critical Habitat or one that would likely harm or kill the species.
- The location of any community watersheds or drinking water source intakes within the PMP area will be determined using the Province of BC's Community Watershed website¹⁶; no pesticide will be stored within the community watershed for more than 24 hours prior to their use and will be removed within 7 days of their use. If pesticide residues are detected at a community watershed water intake, larvicide applications will be discontinued until the local Medical Health Officer has been satisfied that all required measures have been implemented to preserve water quality.
- Due to the physical properties, their application directly to aquatic areas, and the lack of toxicity associated with the mosquito larvicides utilized as part of this PMP, pesticide

¹⁵ The chance of either overspray or misapplication of pesticide has been drastically reduced as part of the FVRD Nuisance Mosquito Control Program since elimination of the chemical control component utilized previously.
¹⁶ https://catalogue.data.gov.bc.ca/dataset/community-watersheds-current

FVRD Mosquito Pest Management Plan 2019-2024

treatments conducted in accordance with this PMP will not cause contamination of food intended for human consumption and do not represent a risk to fish and aquatic organisms (other than mosquito larvae) or wildlife. As per the *Integrated Pest Management Regulations*, due to their low toxicity and limited environmental impacts, bacterial agents belonging to the genus *Bacillus* used for mosquito larviciding programs are exempted from both the notreatment zones and pesticide-free zones requirements for protection of water sources and bodies of water.

- All treatment is conducted above the high water mark and not considered permanent, fish bearing bodies of water or waters that have permanent, direct, surface-water connections with fish bearing bodies of water (as per s78(1) of IPMR).
- Care will be taken to minimize potential impacts from field technicians working within riparian
 and wildlife habitat by staying on paths or existing trails and avoiding trampling native
 vegetation. There will be no re-fueling of machinery or application equipment, no mosquito
 larvicide mixing, and no disposal of unused larvicide or personal garbage, within 15m of
 riparian areas or sensitive wildlife habitat or fish bearing bodies of water that have permanent,
 direct, surface-water connections with fish bearing bodies of water.
- All pesticide application equipment used by FVRD contractors will be kept clean and in good repair and be kept calibrated appropriately for the larvicide being applied. Application equipment shall be re-calibrated when larvicide active ingredients or formulations are changed and immediately when variation in output is noticed.

4. REPORTING, NOTIFICATION, AND CONSULTATION

Under the Integrated Pest Management Regulation, the FVRD or its contractors are required to maintain records of pesticide applications, submit annual records and notices of intent to treat to the Province, and undertake prescribed consultation requirements as part of the PMP.

4.1 Records and Reporting

The FVRD will maintain records of all pesticide applications, including:

- Treatment locations
- Larvae monitoring results (both pre- and post-treatment)
- Treatment date and time
- Pesticide used
- Method of application
- Rate of application
- Total quantity of pesticide used
- Relevant meteorological conditions
- Reasoning if treating is conducted within the 30m non-treatment zone around a water supply intake or well used for domestic or agricultural purposes.

Annual Reports of Pesticide Use will be provided to the Province for all areas treated for mosquitoes under this PMP. Specifically, these reports will include: contractor and client contact information, pesticide application permit number, the pesticide applicator license numbers belonging to all applicators, the dates and times of pesticide applications, the target mosquito species, the pesticide trade name and registration number, the method and rate of application, the total quantity used of each pesticide, environmental conditions during application (i.e., temperature, precipitation, wind velocity, etc.), the mosquito monitoring methods, and treatment triggers. Reporting of all mosquito control activities will be completed by the end of the same calendar year as the activities that took place. Permit non-compliance shall be reported to the Administrator within 48 hours of the infraction's discovery.

4.2 Notification

The FVRD's contractors will submit a 'Notice of Intent to Treat' to the Province prior to the start of each year's mosquito control program. This Notice will contain the name and address of the confirmation holder, a description or map of the proposed treatment locations, a description of the proposed treatment for each area, and the total area proposed for treatment.

In addition, written notification will also be given to the Province when any of the following conditions of this PMP change:

- The area of proposed control activities changes;
- The control methods change;
- The pesticides available to, and used by, this program change;
- Situations emerge that require control beyond the level permitted by the PMP, including but not limited to:
 - Extreme levels of mosquito activity
 - Emergence of vector-related disease
 - o Identification of new significant mosquito species that requires treatment.

Notification will be given as soon as the triggering condition arises and program activities will continue status quo until such time as the Ministry has given approval for the change.

4.3 Consultation

The *IPMR* specifies that consultation with First Nations and the public be conducted when a PMP is being prepared. Prior to submitting a Pesticide Use Notice for PMP confirmation, the FVRD will conduct a thorough consultation process to abide by the requirements of the Act including the following process:

- Identify all First Nations potentially affected by the PMP and conduct appropriate consultation as per the 2011 "Ministry of Environment Draft Guidelines for IPM Proponents Conducting Consultations with First Nations";
- Identify all public stakeholders that will be sent direct letters;
- Draft an appropriate newspaper ad, as per the IPMR (S61(1)), and publish (twice) within local newspapers circulated within the communities affected by the PMP;

- Keep a detailed log of all consultation/communications and responses received;
- Prepare Consultation Summary Report and revise PMP if needed.

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6. APPENDICES

Appendix I: Mosquito Treatment Areas

Appendix II: FVRD Mosquito Abatement Bylaw No. 0468 (2001)

Appendix III: Material Safety Data Sheets (MSDSs)

Appendix IV: Confirmation of Receipt of Pesticide Use Notice

Appendix I: Mosquito Treatment Areas





Appendix II: FVRD Mosquito Abatement Bylaw No. 0468 (2001)

FRASER VALLEY REGIONAL DISTRICT

BYLAW NO. 0468, 2001

A Bylaw to convert the former Dewdney Alouette Regional District Mosquito Control function and the former Central Fraser Valley Regional District Mosquito Control Function to separate Service Areas; and to then consolidate and merge the Dewdney Alouette Mosquito Control Service Area, the Central Fraser Valley Mosquito Control Service Area, and the Fraser-Cheam Mosquito Abatement Extended Service Area into one service area

WHEREAS the Fraser Valley Regional District was incorporated by Letters Patent effective December 12, 1995;

AND WHEREAS Article 11 of the Letters Patent incorporating the Fraser Valley Regional District provides that all services of the former Central Fraser Valley Regional District, Dewdney Alouette Regional District, and Regional District of Fraser-Cheam, in force and effect at the time of dissolution, whether established by legislation, regulation, order in council, letters patent, supplementary letters patent or bylaw pursuant to the former *Municipal Act, RSBC Ch. 290*, are services of the Fraser Valley Regional District, except as to those services described in Section 11.4 of the Letters Patent;

AND WHEREAS the Central Fraser Valley Regional District was granted the Mosquito Control function pursuant to Supplementary Letters Patent dated April 10, 1975 and amendments thereto, said function to include all lands within the current boundaries of the City of Abbotsford and Electoral Area H of the Fraser Valley Regional District;

AND WHEREAS the Dewdney Alouette Regional District was granted the Mosquito Control function pursuant to Supplementary Letters Patent dated January 18, 1973 and amendments thereto, said function to include all lands within the current boundaries of Electoral Areas F and G and portions of C of the Fraser Valley Regional District and the District of Mission;

AND WHEREAS the Regional District of Fraser-Cheam Mosquito Abatement Extended Service Area was established by the Regional District of Fraser Cheam Mosquito Abatement Extended Service Area Establishment Bylaw No. 1030, 1991, said service area to include all lands within the current boundaries of the City of Chilliwack, the District of Kent, the District of Hope, the Village of Harrison Hot Springs and Electoral Areas D, E and portions of Electoral Area B of the Fraser Valley Regional District; **AND WHEREAS** the Board of Directors of the Fraser Valley Regional District wishes to extend the boundaries of the Regional District of Fraser Cheam Mosquito Abatement Extended Service Area to include all of Electoral Areas A, B and C of the Fraser Valley Regional District;

AND WHEREAS in accordance with Section 774.2(3) of the *Local Government Act*, *RSBC Ch. 323, 1996 (the Act*), the Board of the Fraser Valley Regional District wishes to convert the Dewdney Alouette Regional District and Central Fraser Valley Mosquito Control functions to separate Service Areas;

AND WHEREAS Section 802.1 of the *Act*, provides that the Board may, by Bylaw, provide for changes to the boundaries of a Service Area, including the merger of two or more service areas;

AND WHEREAS the Board of Directors of the Fraser Valley Regional District wishes to consolidate and merge the Dewdney Alouette Mosquito Control Service Area, the Central Fraser Valley Mosquito Control Service Area, and the Fraser-Cheam Mosquito Abatement Extended Service Area into one service area, thereby establishing the Fraser Valley Regional District Mosquito Control Service Area;

AND WHEREAS the consent of at least 2/3 of the participants has been obtained in accordance with Section 802 of the Act;

NOW THEREFORE in open meeting assembled, the Board of Directors of the Fraser Valley Regional District enacts as follows:

1. <u>CITATION</u>

This Bylaw may be officially cited for all purposes as the "Fraser Valley Regional District Mosquito Control Service Area Conversion, Merger and Establishment Bylaw No. 0468, 2001".

2. <u>ENACTMENTS</u>

- i) The Dewdney Alouette Regional District Mosquito Control function granted pursuant to Supplementary Letters Patent dated January 27, 1976 is hereby converted to and established as a Service Area;
- ii) The Central Fraser Valley Regional District Mosquito Control function granted pursuant to Supplementary Letters Patent dated January 18, 1973 is hereby converted to and established as a Service Area;

- iii) The boundaries of the Dewdney Alouette Regional District Mosquito Control Service Area, the Central Fraser Valley Regional District Mosquito Control Service Area, and the Regional District of Fraser Cheam Mosquito Abatement Service Area as extended to include all of Electoral Areas A, B and C of the Fraser Valley Regional District, are hereby consolidated and merged into a separate Service Area hereinafter referred to as the "Fraser Valley Regional District Mosquito Control Service Area";
- The boundaries of the Fraser Valley Regional District Mosquito Control Service Area shall be the boundaries of the Fraser Valley Regional District;
- v) The participants of the Fraser Valley Regional District Mosquito Control Service Area shall be all of Electoral Areas A, B, C, D, E, F, G, and H of the Fraser Valley Regional District and all of the City of Abbotsford, City of Chilliwack, District of Mission, District of Kent, District of Hope and Village of Harrison Hot Springs.
- v) In accordance with Sections 800.1 and 803 of the *Act*, the annual costs of the service may be recovered by:
 - (a) property value taxes imposed and collected under Part 24, Division 4.3 of the Act; and/or
 - (b) the imposition of fees and other charges in accordance with Section 797.2.
- vi) In accordance with Sections 800.1, 805.1 and 806.1 of the Act, the maximum amount that may be collected or requisitioned for the service shall be \$600,000. or \$.04 / \$1,000.00 of the net taxable value of land and improvements within the service area, whichever is greater.

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3. **REPEAL**

i) Regional District of Fraser Cheam Mosquito Abatement Extended Service Area Establishment Bylaw No. 1030, 1991 and any and all amendments attached thereto are hereby repealed.

4. **READINGS AND ADOPTION**

READ A FIRST TIME THIS 27th day of NOVEMBER, 2001 READ A SECOND TIME THIS 27th day of NOVEMBER, 2001 **READ A THIRD TIME THIS** 27th day of NOVEMBER, 2001 APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS 21st day of JANUARY, 2002. ADOPTED THIS 26th day of FEBRUARY, 2001. Chair/Vice Chair Administrator/Deputy 5. **CERTIFICATIONS**

I hereby certify the foregoing to be a true and correct copy of the "Fraser Valley Regional District Mosquito Control Service Area Conversion, Merger and Establishment Bylaw No. 0468, 2001"." as read a third time on the 27th day of November, 2001. Dated at Chilliwack, BC this 27th day of November, 2001.

Administrator/Deputy

I hereby certify that this a true and correct copy of the "Fraser Valley Regional District Mosquito Control Service Area Conversion, Merger and Establishment Bylaw No. 0468, 2001 as adopted by the Board of Directors of the Fraser Valley Regional District on the 26th day of February, 2002.

Administrator/Deputy

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No.	

Statutory Approval

of the	Local Go	overnn	nent Act		
l hereby a	approve Byla	aw No)	0468	
of	the Fraser Valle	ey Reg	ional Dis	strict	
a copy of	which is att	ache	d heret	0.	
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Appendix III: Material Safety Data Sheets (MSDSs)

Material Safety Data Sheets for all of the *Bacillus*-containing mosquito larvacide products identified within this Plan (Aquabac 200G, Aquabac XT, Vectobac 200G, Vectobac 1200L, and Vectolex CG) can be provided upon request. Please contact Lance Lilley at the Fraser Valley Regional District: <u>llilley@fvrd.ca</u> if you would like to request a copy of any or all of these MSDSs.

Appendix IV: Confirmation of Receipt of Pesticide Use Notice

Will be updated upon receipt of Pesticide Use Notice



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee From: Jamie Benton, Environmental Services Coordinator Date: 2019-01-09 File No: 5380-29-005

Subject: The BC Organics Infrastructure Program

INTENT

This report is intended to advise the Board of information pertaining to the BC Organics Infrastructure Program. Staff is not looking for a recommendation and has forwarded this information should members want more clarification to discuss the item further.

STRATEGIC AREA(S) OF FOCUS

Support Environmental Stewardship Provide Responsive & Effective Public Services

PRIORITIES

Priority #1 Waste Mangement Priority #2 Air & Water Quality

BACKGROUND

The BC government ran a submission process from September to November, 2018, asking for Expression of Interest in the BC Organics Infrastructure Program. The program, which was set up with \$10 million from the Province and an additional \$10 million from the federal Low Carbon Economy Fund, is designed to facilitate investment towards organic infrastructure to reduce greenhouse gas emissions. This funding opportunity was open to and had to be submitted by local governments only; however, applicants could choose to team with a range of partners. The applicant is expected to contribute one-third of all eligible costs and have a long term commitment to the proposed infrastructure.

The Fraser Valley Regional District (FVRD) received a number of unsolicited proposals from private companies wanting to pursue this funding opportunity and to partner with a local government as the lead applicant. One of the more formal proposals was from the Catalyst Agri-Innovation Society, led by Mr. Chris Bush, who presented to the Regional & Corporate Services Committee in December. Mr. Bush was requesting the FVRD to enter into a joint venture partnership with his Society through a Certified Benefits Corporation and become the lead applicant for a \$15 million animal manure/municipal sewage treatment proposal which included piloting technology for organics deconstruction, an on-farm anaerobic digester and a commercial fertilization plant. Mr. Bush was also asking for \$20,000 directly from the FVRD to engage a consultant to prepare an Organics Conversion Strategy, which would help form part of the application package for grant funding.

DISCUSSION

The eligibility conditions of the Organics Infrastructure Program put the onus and responsibility on local governments to apply as the lead applicant; however, the short submission period and difficult timing through recent local elections did not allow local governments time for due process or adequate due diligence. It is the FVRD's practice to conduct business in an open and transparent manner and entering into an unsolicited partnership with one local business would not have allowed for a competitive procurement process that is a requirement under the FVRD's Corporate Purchasing Policy.

It is also a concern that partnering in such a fashion would be in violation of section 25 of the *Community Charter* and section 182 of the *Local Government Act*. Although the FVRD is not the purveyor of the grant, entering into a partnering agreement with a private business could be considered "assistance to a business" as there was no public procurement process or call for expressions of interest by the FVRD which would have allowed other businesses the opportunity to also benefit from a potential partnering agreement and subsequent access to grant funding.

In Mr. Bush's proposal, part of the concept involved the Joint Abbotsford Mission Environmental System "JAMES" Waste Water Treatment Plant which already produces beneficial biogas and Class A biosolids. The treatment of effluent from these municipalities is not the responsibility of the FVRD, nor does the FVRD have any ownership in this established infrastructure; therefore, the FVRD would not be an appropriate body to commit to its involvement in a proposal.

Lastly, the FVRD does not have a mandate to manage regional issues involving animal manure, municipal sewage, or biosolids. There is no forecasted budgetary consideration to take on this responsibility. The FVRD does have a mandate through its Solid Waste Management Plan to further the diversion of Municipal Solid Waste, but in the case of Mr. Bush's proposal, it was not intended to process this material. The other unsolicited proposals did involve the treatment of Municipal Solid Waste, but as the FVRD does not have any contractual obligations or ownership in these private facilities, nor has plans to, it would not be an appropriate local government to lead these grant applications.

COST

N/A

CONCLUSION

The FVRD was approached by several unsolicited private businesses requesting that the FVRD be the lead applicant for grant funding under the Organics Infrastructure Program. This opportunity was not acted upon by the FVRD for a variety of reasons including a lack of mandate, a lack of transparent competitive procurement process, and a lack current financial interest or contractual obligations involving private organics infrastructure in the region.

After a very short submission window, the Organics Infrastructure Program has now closed and the Province is no longer accepting submissions.

COMMENTS BY:

Barclay Pitkethly, Director of Regional Programs

Reviewed and supported

Mike Veenbaas, Director of Financial Services

No further financial comment

Paul Gipps, Chief Administrative Officer

Reviewed and supported



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee From: David Urban, Manager of Outdoor Recreation Planning Date: 2019-01-09 File No: 1855-20-Outdoor Rec

Subject: FVRD Outdoor Recreation Economic Impact Analysis Update

INTENT

This report is intended to advise the Regional and Corporate Services Committee of information pertaining to FVRD Outdoor Recreation Economic Impact Analysis. Staff is not looking for a recommendation and has forwarded this information should members want more clarification to discuss the item further.

STRATEGIC AREA(S) OF FOCUS

PRIORITIES

Priority #4 Tourism

Priority #5 Outdoor Recreation

Support Environmental Stewardship

Support Environmental Stewardship

Foster a Strong & Diverse Economy

BACKGROUND

In 2017, the Fraser Valley Regional District hosted a facilitated multi-stakeholder visioning workshop to discuss the future potential of outdoor recreation and tourism in the region. In alignment with the outcomes of this workshop, the priorities outlined by the FVRD Strategic Plan 2014-2018, and with the support of the Board, last year the FVRD was successful in receiving \$282,000 through the Gas Tax Strategic Priorities Fund (SPF) program.

The application consisted of two projects, when combined, will comprise the FVRD Outdoor Recreation and Tourism Infrastructure Management Plan. Currently underway is the first component of this plan, which is the the region-wide outdoor recreation economic impact analysis.

As there is no guiding outdoor recreation strategy for the FVRD as a whole, the second component of this plan will be a region-wide outdoor recreation asset management strategy which will begin in early 2019. This strategy will be highly collaborative, bringing together a wide range of stakeholders,

including federal and provincial agencies, local government, First Nations, and user groups from throughout the region. This strategy will focus on the impacts of increased visitation, policies and procedures necessary for long-term sustainability, establishing roles and responsibilities, issues that cross jurisdictional boundaries and establishing an operational framework for the ongoing management of the region's recreational assets.

DISCUSSION

The FVRD is currently working on a year-long outdoor recreation economic impact analysis. The goal of this project is to quantify the value of outdoor recreation activities, both motorized and non-motorized, in the region. The information collected will address a critical need, as there is currently no data available specific to this region. This data will inform us about the spending patterns, travel behaviours and characteristics of outdoor recreation users in our region, which will be essential to future planning and infrastructure development. The information collected from the project will help guide FVRD strategic planning, and support both regional Destination Marketing Organization's (DMOs) and Destination BC's planning process for the Fraser Valley.

Peter Larose from Larose Research & Strategy along with Align Consulting, Laura Plant Consulting and input from the project working group has developed the methodology and work plan to undertake this ambitious collection of data. This information will be primarily collected through intercept surveys at several key outdoor recreation locations. As well, an online survey will be done to help round out the data.

Sampling winter activities such as snowmobiling, cross-country/backcountry skiing, and snowshoeing has already begun. As the seasons change, the focus will then shift to sampling spring and summer activities such as:

- motorized trail activities e.g. dirt bike, all-terrain vehicles;
- non-motorized trail activities e.g. hiking, scrambling, rock climbing, trail running, road cycling, mountain biking, horseback riding;
- water activities e.g. canoeing, kayaking, stand up paddleboard, boating;
- sport fishing e.g. guided, salmon, sturgeon, lake based;
- paragliding skydiving, and
- animal viewing e.g. bald eagles;
- hunting;
- First Nation's cultural tourism.

Engaging user groups has begun since they will be critical to the success of this project. These groups know where the various activities occur, so already some winter based groups have been asked to help identify priority survey locations. Also, all these groups can assist in spreading the word about this initiative within their communities.

COST

The SPF funds up to 100% of eligible costs. The FVRD received the full amount requested of \$282,000 for the FVRD Outdoor Recreation Economic Impact Analysis and Management Plan.

CONCLUSION

The outdoor recreation economic impact analysis project is advancing on schedule. The sampling of winter activities began in December and the other activities will be surveyed as they start happening.

COMMENTS BY:

Barclay Pitkethly, Director of Regional Programs

Reviewed and supported.

Mike Veenbaas, Director of Financial Services

Reviewed and supported.

Paul Gipps, Chief Administrative Officer

Reviewed and supported

HARRISON HOT SPRINGS Naturally Refreshed

File: 1855-03-17

December 20, 2018

Fraser Valley Regional District 45950 Cheam Ave Chilliwack, BC V2P 1N6

RE: ICIP - Community, Culture, and Recreation Grant Letter of Support

Dear Chair Lum and Directors,

The Village of Harrison Hot Springs has an opportunity to create a new public building to serve as a Culture Hub with amenities to support cultural, tourism, visual and live arts, as well a public gathering space. Funds for this project are being sought from the Community, Cultural and Recreation Program of the Investing in Canada Infrastructure Program (ICIP) as well as other potential funding programs and rebates. The ICIP funding program specifically supports citizens' access to cultural, recreational, and community spaces and we feel that our Cultural Hub project is an ideal fit.

The concept of this multi-purpose public building that will support our community and cultural values will have a centrally dedicated space for indigenous, historical, and arts exhibits, gatherings, and a live performance space that can also be used as a conventional setting for Village Council meetings. To maximize the use of the compact building footprint, a second floor will contain office and meeting space to house administrative staff and provide functional and secure working conditions.

The benefits of this new building will include not only increased access to and quality of cultural and recreational spaces but will bolster civic pride, in turn creating ambassadors for our community who will promote tourism and resident attraction and retention.

While we look forward to presenting the architectural concept for public involvement on the final design of the building, we wish to express that our key priorities in the design will include accessibility, net-zero energy consumption, and public washrooms. By building a net-zero energy consumption building now, we are leading the way in solutions to prevent global climate change and leave as small of a footprint as possible, while supporting the Provincial mandate to reduce energy consumption by 40% before 2030.

The Village is seeking the support of the Fraser Valley Regional District in our grant applications and a letter expressing this no later than January 15th would be appreciated. A sample letter is attached that you may use if you wish.

Yours truly, ele Leo Facio Mayor

Municipal Office: P.O. Box 160, 495 Hot Springs Road, Harrison Hot Springs, BC V0M 1K0 E info@harrisonhotsprings.ca W www.harrisonhotsprings.ca T 604 796 2171 F 604 796 2192 Date:

Village of Harrison Hot Springs 495 Hot Springs Road Harrison Hot Springs, BC VOM 1K0

Attn: Mayor and Council

RE: ICIP - Community, Culture, and Recreation Grant

Dear Mayor Facio and Council,

We wish to express our support for your grant application to the Investing in Canada Infrastructure Program: Community, Culture, and Recreation grant. We understand that this grant funding will support the Village of Harrison Hot Springs proposal to construct a Cultural Hub. This new building that will be adjacent to the historical McPherson House, Visitor Centre, and Sasquatch Museum, will have a centrally dedicated space for indigenous, historical and arts exhibits, gatherings, and a live performance space that can also be used as a conventional setting for Village Council meetings.

This project will support growth in both your community and our region and is in keeping with our Regional Growth Strategy. We support this opportunity for increased cultural exposure to both residents and visitors of Harrison Hot Springs.

Sincerely,

Name

Title





T'er

7170 Cheam AvenueTel;PO Box 70Fax:Agassiz, British ColumbiaWeb:Canada V0M 1A0Veb:

(604) 796-2235 (604) 796-9854 www.district.kent.bc.ca

December 21, 2018

File: 1855-03

Mr. Jason Lum, Chairman Fraser Valley Regional District 45950 Cheam Avenue Chilliwack, BC V2P 1N6

Dear Mr. Lum:

<u>RE:</u> Letter of Support for Indoor Aquatic Facility: Investing in Canada Infrastructure Program.

The District of Kent (District) is seeking a letter of support from the Fraser Valley Regional District (FVRD) to accompany the District's application for an Indoor Aquatic Facility through the Investing in Canada Infrastructure Program (ICIP), due on January 23, 2019.

For more than a decade, the District of Kent has been exploring the viability of an indoor aquatics facility to serve Kent residents, Harrison Hot Springs, surrounding areas and our Indigenous communities. Due to the aging infrastructure of the Ferny Coombe Pool, which is now 40 years old and well past its lifespan, an indoor pool would replace the outdoor pool infrastructure and services.

Conceptually, a new indoor aquatics facility would be connected to the south side of the Community Recreation and Cultural Centre and be operated by the District of Kent in conjunction with existing recreation facilities. The proposed amenities would include an accessible 25 metre, 6 lane tank, zero depth leisure pool, hot tub, changeroom/shower area and lifeguard staff room. The existing administration area would be enhanced to service both the pool and community centre public access. Photos of a similar indoor pool design, nearing completion is attached.

On October 22, 2018 Kent Council approved the District's application of an indoor aquatic facility to the ICIP grant funding program. The District will be applying through the Community, Culture and Recreation Stream in both the main application program (up to 73.33% of costs) and the Rural and Northern Communities Program (up to 90% of costs).

A recent Indoor Aquatics Facility Preliminary Analysis Report, provided by RC + PERC to the District, outlines that a medium sized indoor aquatic facility constructed with the aforementioned amenities would cost approximately \$15 million dollars.

Such a significant community wide initiative would not be possible without the support of our surrounding communities; therefore, the District is seeking a letter of support from the FVRD to demonstrate the strong desire for an indoor aquatic facility in our region.

During the application process with ICIP, our staff will be proceeding with finalizing the architectural design, consulting with communities, and firming up costs for the future.

For more information, please contact Ms. Jennifer Thornton, Director of Community Services and Projects at <u>jthornton@kentbc.ca</u> or 604-796-2235.

Sincerely,

Sylvia Pranger Mayor

Pc: W. Mah, Chief Administrative Officer J. Thornton, Director of Community Services & Projects J. Lewis, Director of Finance

Vanderhoof Aquatic Facility – Pool Photos (for conceptual purposes only)

Photos of Vanderhoof Aquatics Centre, nearing completion. District of Kent Indoor Aquatic Facility would be of similar design and amenities including 25 m, 6 lane main tank, leisure pool and hot tub.



Below is the lazy river at the end of the Leisure Pool.



